IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Terry Knight	)	Art Unit	3748
Serial No.	10/059,560	)	Examiner:	Theresa Trieu
Filed:	January 29, 2002	)		
For:	MINIMUM CONTACT SEAL POSITIVE DISPLACEMENT DEVICE METHOD & APPARATUS	)	Attorney Ref. No.:	P323659

Mail Stop DD
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INFORMATION DISCLOSURE STATEMENT (IDS)

Sir :

Please accept the information disclosure statement and pursuant to *37 CFR 1.97* enclosed is a check in the amount of $180.00 pursuant to the fee set forth in § 1.17(p). Please charge any extra fees to Deposit Account No. 08-3260.

Pursuant to the duty of disclosure set forth in 37 CFR 1.56 and as set out by 37 CFR 1.97 and 1.98, Applicant hereby submits an information disclosure statement including a listing of patents, publications and other information of which Applicant is aware and a copy of each listed item.

While this IDS may be "material pursuant to 37 CFR 1.56 it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such. Furthermore, in accordance with 1.97(c), the filing of this IDS is not to be construed to mean that no other material information as defined in 37 CFR 1.56(a) exists.

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A list of the patents and publications is set forth on the attached PTO-1449 Form. A copy of each of the items listed is supplied herewith for the Examiner's convenience and these include the following:

U.S. Patent Documents

Patent No.	Publication Date	Inventor	Title
32,372	5/21/1861	Jones	Rotary Pump
351,129	10/19/1886	Salomo	Rotary Pump and Blower
914,155	3/2/1909	Mills & Conn	Rotary Motor
991,576	5/11/1911	White	Rotary Engine
1,379,653	5/21/1921	Shoemaker	Rotary Engine
2,101,051	12/7/1937	Cuny	Rotary Fluid Displacement Device
2,101,428	12/7/1937	Cuny	Rotary Fluid Displacement Device
2,242,058	5/13/1941	Cuny	Rotary Fluid Displacement Device
2,431,817	12/2/1947	Mann	Fluid Displacement Device of the Gear Type
3,106,912	8/15/1963	Kahlert	Air Cooled Rotary Internal Combustion Engine
3,101,700	8/27/1963	Bowdish	Rotary Compressor or Engine
3,156,222	11/10/1964	Miller, Jr., L.E.	Flathead spherical engine
3,236,186	2/22/1966	Wildhaber	Positive-Displacement Unit
3,272,130	11/13/1966	Mosbacher	Multiple Stage Pump
3,816,038	6/11/1974	Berry	Spherical Displacement Device and Seal Means Therefor
3,816,039	6/11/1974	Berry	Rotary Air Pump with Rotating and Oscillating Center Piston
3,856,440	12/24/1974	Wildhaber	Rotor Pair for Positive Flow Displacement
5,755,196	5/26/1998	Klassen	Rotary Positive Displacement Engine
6,036,463	3/14/2000	Klassen	Rotary Positive Displacement Engine

Foreign Patent Documents

Foreign Patent Document	Publication Date	Inventor	Title
5686	11/27/1902	Weiss, Johann Michael	Rotary Engine or Pump with Annular Pistons Rotating at an Acute Angle round a Common Axis
268,459	1/7/1933	Cargnelutti	Pumpa Rotativa
43-29764	12/20/1943	Komuro	Rotary Machine
916.277	8/19/1946	Saumon	Turbine with Maximum Utilization of Energy and Multi-Purpose Use
805,370	12/3/1958	Aktiengesellschaft	A Slant Shaft Rotary Piston Engine
1,099,085	1/1/1968	Wildhaber	Rotary Positive Displacement Units

1,551,081	4/16/1970	Bietzig	Drehkugelmaschine
2,639,760	3/9/1978	Anmelder	Rotationskolbenmaschine
55-72,683	5/31/1980	Hatsutori	Rotary Pump
3,221,994	12/15/1983	Wern	Rotationskolbenmaschine
2,069,607	11/27/1993	Rosborough	Spherical Rotary Pump
99/61753	12/02/1999	Klassen	Rotary Engine and Method for Determining Engagement Surface Contours Therefor

Non-Patent Literature Documents

Title	Publication Date	Author	Title
Wankel -Rotary Piston Machines	1/1/1965		Rotary Piston Machines
Granco Positive Displacement Pump	12/10/1981	George, Michael	Positive Displacement Rotary Pump

Description of Prior Art References in Chronological Order by Issue or Publication Date:

U.S. 32,372 Jones et al., shows a rotary motion pump that has two rotors that are offset from collinear. The teeth or cogs are the same number on each opposing rotor and as shown in Fig. 1, the cogs J pass into the spaces between the teeth of the other disk.

U.S. 351,129 Solomo, shows a rotary pump and blower that has two pumping disks each having wedge shaped pieces that engage one-another at the bottom dead center location.

G.B. 5,686 Weiss, shows a rotary motion pump where two discs g and h that each have two approximate ninety degree sections that are placed in solenoid channels B that overlap at an intersecting area.

U.S. 914,155 Mills, shows a rotary motor having two or more cylinders arranged in tandem where the blades in each cylinder at different angles to the axis of the shaft.

U.S. 991,576 White, shows a rotary engine where "motive medium" enters in at port 6 and is ejected at 7. Apparently the motive medium imposes a pressure induced force upon the wings 16 (Fig. 11) to cause a moment about the shaft 4 to cause the rotary piston to rotate.

US. 1,379,653 Shoemaker, shows a rotary motion device having two rotors that are offset from collinear.

I.T. 268,459 Cargnelutti, shows a rotary motion device where a first rotor 4 is offset form collinear from a second rotor 6. As shown in Figs. 1 and 3, the first rotor 4 has fins 5 that insert into the radially inward recessed portion of the second rotor 6.

U.S. 2,101,051 Cuny, shows a rotary fluid displacement device where two rotating disk elements 3 and 4 each have an axis of rotation that is offset from collinear where the blades 4A of the disk 4 extend through slots 3A of disk 3 where by chambers are defined that change in volume with respects to rotation of the disks.

U.S. 2,101,428 Cuny, shows a fluid displacement device where the blades of the disk 16 do not extend directly radially outwardly but instead angle back tangentially and the corresponding slots of the rotor 15 are adapted to engage the surfaces 16s of the blades to provide a sealed chamber.

U.S. 2,242,058 Cuny, shows a rotary fluid displacement device having two disks one with blades and an opposing disk with slots that are adapted to engage the blades where the slots are provide with an adjustment mechanism to vary the gap clearance from the blades.

J.P. 43-29764 Komuro, shows a rotary machine where the axis of tow opposing rotors are offset by an angle θ. Figs. 9-13 appear to illustrate the motion of two lobes of opposing rotors interfacing in the course of a near complete rotation.

U.S. 2,431,817 Mann, shows a rotary motion gear pump where a channel 126 allows communication to longitudinally rearward portion of the enlarged spherical portion 110 to reduce the axial thrust.

F.R. 916,277 Saumon, shows a turbine where Figs. 4 and 7 show a side view of two rotor assemblies that are offset from collinear.

G.B. 805,370 Aktiengesellschaft, shows a slant shaft rotary piston engine where the two offset form collinear rotors revolve continuously and

unidirectionally at different speeds about their respective axes. Fig. 7 shows a practical application of the rotor assembly.

G.B. 1,099,085 Woldhaber, shows a rotary positive displacement device that employs two rotors having axes of rotation that are offset from collinear where one of the rotors has one less tooth than the opposing rotor. As shown in Figs. 14 and 16 the teeth of the rotor 35 are designed to advance into an adjacent chamber region of the opposing rotor after each rotation.

U.S. 3,106,912 Kahlert ,shows an internal combustion engine that as shown in Figs. 9 and 10 comprises piston and chamber members that having surfaces ab and ad that are concave.

U.S. 3,101,7000 Bowdish, shows a compressor that has tow rotors that have axes of rotation which are offset from being collinear where the vanes 3 have a double convex design. As seen in Figs. 14 – 19 the insertion of the vane is progressively shown with respects to the rotation of the rotors where the surfaces on each side of the vane are employed to provide a seal (Fig. 17).

U.S. 3,156,222 Miller, shows a spherical engine where as seen in Fig. 7 the shaft 215 rotates and the chamber 30b is momentarily at high pressure while the chamber 30a is at near atmospheric (Fig. 1). The high pressure induces the "nutator" to rotate.

Excerpt from a book titled "Rotary Piston Machines' by Felix Wankel, Classification of design principles for engines, pumps and compressors, 16 pages, 1965: This publication shows the Wankel Engine that in general has an internal rotating member that rotates with respects to an outer member. The inner member oscillates from one extended portion of the rotor to another whereby causing a positive displacement effect.

U.S. 3,236,186 Wildhaver, shows a positive displacement rotary unit where the rotor 35 has one less tooth than the opposing offset rotor 34.

U.S. 3,272,130 Mosbacher, shows a rotary motion gear type engine where as shown in Figs. 4 and 12 an internal gear member 36 is adapted to rotate in a planetary style within the outer gear 41.

G.B. 1,099,085 Wildhaber, shows a rotary positive displacement unit have two gears where one has one less tooth than the opposing gear.

U.S. 3,816,038 Berry, shows a spherical displacement device where a piston P-3 converges at the center of the housing and is adapted to draw in and discharge the volume in the pistons.

DE 1,551,081 Bietzig, shows a rotating ball machine where as shown in the Figs. 1-4 the rotors are offset from collinear and the lobes of the opposing rotor engage in the bucket region between two adjacent lobes of the opposing rotor where subchambers are formed on either side of the inserted lobe (see Fig. 4).(translation included).

U.S. 3,816,039 Berry, shows a rotary pump where the center piston P-2 oscillates whereby chambers are formed and change in volume with respects to the oscillations.

U.S. 3,856,440 Wildhaber, shows a rotor pair for positive displacement where one of the rotors has one less tooth than the opposing offset rotor.

DE 2,639,760 Anmelder, shows a machine where each gear wheel is offset form being collinear. As seen in Figs. 15-17 the central member is adapted to simultaneously engage the upper rotor member and the lower rotor member. The embodiments employ a nautilus type grove engagement system (Fig. 5).

JP 55-72,683 Hatsutori, shows a rotary motion device where the extention 17b is adapted to engage the planar face 17a.

Granco Positive Displacement Rotary Pump product brochure, 6 pages, with attached article, Principles of operation and performance characteristics of Rotary Ball Pumps by Michael L. George, Challenge Manufacturing Co. Inc. Oakland, CA 4 pages, Plant Engineering December 10, 1981: shows a disclosure of the rotary ball type pumps.

D.E. 3,221,994 Wern, shows a rotary piston machine where the cone gear wheels are rotation about axis that define an obtuse angle. The tip of the tooth 4 is adapted to engage the opposing base region between two adjacent teeth at bottom dead center and subchambers are defined on either side of the

tooth. Figs. 11- 24 show an embodiment where a trapezoidal end cross-section teeth are employed. As shown in Fig 12 a passageway 15 is provided for a leakage path; however the adjacent tip of tooth 4 is engaged with the surface of opposing tooth 5 to provide a seal. (translation enclosed).

C.A. 2,069,607 Roseborough, shows a rotary pump where the lobes 6 of rotors are adapted to engage each other to define operating chambers.

U.S. 5,755,196 and 6,036,463 Klassen shows a half lobe design that has surfaces defined by a tear drop that is defined by an axis that is at an angle alpha/2 from the opposing rotor that is defined as both rotors rotate in the same direction.

WO 99/61753 Klassen shows a dual face rotor assembly where the axes are offset from collinear and the lobes of the rotors prevent backlash under high differential pressures between inlet and outlet ports.

The above references are enclosed for the examiner's convenience.

Signed at Bellingham, County of Whatcom, State of Washington, this Monday, May 10, 2004

Respectfully submitted,

James Klassen

By_____

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Certificate of Mailing (37 CFR 1.8a)

I hereby certify that this document (along with any document referred to as being attached or enclosed) is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on date shown below.

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Date

Liz Kovacs

PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	10/059,560
Filing Date	January 29, 2002
First Named Inventor	James B. Klassen
Art Unit	3748
Examiner Name	Theresa Trieu
Attorney Docket Number	P323659

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document Number Number- Kind Code2	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	US- 32,372	5/21/1861	Jones	
	A2	US- 351,129	10/19/1886	Salomo	
	A3	US- 914,155	3/2/1909	Mills & Conn	
	A4	US- 991,576	5/11/1911	White	
	A5	US- 1,379,653	5/21/1921	Shoemaker	
	A6	US- 2,101,051	12/7/1937	Cuny	
	A7	US- 2,101,428	12/7/1937	Cuny	
	A8	US- 2,242,058	5/13/1941	Cuny	
	A9	US- 2,431,817	12/2/1947	Mann	
	A10	US- 3,106,912	8/15/1963	Kahlert	
	A11	US- 3,101,700	8/27/1963	Bowdish	
	A12	US- 3,156,222	11/10/1964	Miller, Jr., L.E.	
	A13	US- 3,236,186	2/22/1966	Wildhaber	
	A14	US- 3,272,130	11/13/1966	Mosbacher	
	A15	US- 3,816,038	6/11/1974	Berry	
	A16	US- 3,816,039	6/11/1974	Berry	
	A17	US- 3,856,440	12/24/1974	Wildhaber	
	A18				
	A19				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.1	Foreign Patent Document CountryCode3 -Number4- Kind Code5(if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6
	F1	UK 5686	11/27/1902	Weiss,		
	F2	IT 268,459	1/7/1933	Cargnelutti		
	F3	JP 43-29764	12/20/1943	Komuro		
	F4	FR 916.277	8/19/1946	Saumon		
	F5	UK 805,370	12/3/1958	Aktiengesellschaft		
	F6	UK 1,099,085	1/1/1968	Wildhaber		
	F7	DE 1,551,081.	4/16/1970	Bietzig		☑
	F8	DE 2,639,760	3/9/1978	Anmelder		
*	F9	JP 55-72,683	5/31/1980	Hatsutori		
	F10	DE 3,221,994	12/15/1983	Wern		☑
	F11	CA 2,069,607	11/27/1993	Rosborough		
	F12	WO 99/61753	12/02/1999	Klassen		

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional) 2 See Kinds Codes of USPTO Patent Documents at www.usoto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3) 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible 6 Applicant is to place a check mark here if English language Translation is attached.

* Not in file

PTO/SB/08B (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
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Substitute for form 1449B/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 2 of 2

Complete if Known	
Application Number	10/059,560
Filing Date	January 29, 2002
First Named Inventor	James B. Klassen
Group Art Unit	3748
Examiner Name	Theresa Trieu
Attorney Docket Number	P323659

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T2
	C1	Excerpt from a book titled "Rotary Piston Machines' by Felix Wankel, Classification of design principles for engines, pumps and compressors, 16 pages, 1965	
	C2	Granco Positive Displacement Rotary Pump product brochure, 6 pages, with attached article, Principles of operation and performance characteristics of Rotary Ball Pumps by Michael L. George, Challenge Manufacturing Co. Inc. Oakland, CA 4 pages, Plant Engineering December 10, 1981	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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